

REMARKS

This is in response to the office action dated December 6, 2004.

Applicant notes paragraphs 1, 2, 4, 5 and 6 of the office action to which no response is required.

Claims 1-3, 6-11, and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (USP 6,095,295) in view of Johnston et al. (USP 6,318,522) and further in view of Rosaen (USP 3,448,751).

In regard to claims 1 and 15:

In the rejection the Examiner correctly indicates that “Park lacks a second paddle in the structure of the rotary impeller.” The Examiner also correctly indicates that applicants’ claims 1 and 15 require a coil **surrounding** the passageway enabling the viscosity of the magnetorheological fluid to be varied and that Park lacks the claimed coil surrounding the passageway.

Park illustrates a coil 122 buried within annular solenoid 114/annular body 114 and beneath a seal 138. Park is silent as to the orientation of the coil but states at col. 3, lns. 52 et seq.:

“During swing of the wing 112, the magnetorheological fluid in the first fluid chamber 116A flows to the second fluid chamber 116B through the first hole 128, the first cylindrical space 126, the annular space 125, the second cylindrical space 127 and the second hole 129. The rotating direction of the wing 112 and the flow direction of the magnetorheological fluid are represented by arrows in Fig. 4.”

Further, at col. 3, lns. 25 et seq., Park states:

“Upon magnetization of the annular body 121, two confronted ends 123 and 124 of the annular body 121 at the discontinuation act as magnetic poles having opposed polarities to each other. Furthermore, an opened annular space 125 formed between the ends 123 and 124 connects a first cylindrical space 126 to a second cylindrical space 127.”

The orientation of the coil is not disclosed and cannot be established from the disclosure of the Park patent. It can be, however, discerned that the coil 122 is buried beneath the annular space 125 which carries the magnetorheological fluid. The Examiner correctly recognizes that coil 122 does not surround a passageway or annular space. Claim 1 requires a coil which **surrounds** a portion of a passageway enabling the viscosity of the magnetorheological fluid to be varied. In applicants' claims 1 and 15 it is the flux within the coil surrounding the magnetorheological fluid which increases the viscosity of the fluid in proportion to the current through the coil.

The Examiner in the rejection indicates that the teachings of Johnston '522 should be applied in combination with Park '095 because it would have been obvious to modify Park's magnetorheological device to have comprised two paddles as taught by Johnston to further increase the adjustability of the damping capability of the device. First, applicant's invention has two paddles but they have nothing to do with adjustability. Second, Park and Johnston are not properly combinable because Applicants teach compression of the magnetorheological fluid

and Park and Johnston teach shearing of the magnetorheological fluid. See, col. 4, line 28 of Johnston and the gaps 38 illustrated in Fig. 2. Therefore, it is believed that it is not proper to combine the shearing technology of Park and Johnston with the compression technology of applicants.

Park and Johnston both teach shearing of magnetorheological fluid and this is consistent with their purpose of damping. Park at col. 2, line 15, recites a “narrowed flowing path” as does claim 1 of Park. Johnston, too, recites an outer gap 38 which restricts the flow of the MR fluid by increasing the viscosity of the fluid which adds a shear force that any fluid must overcome in order to flow through the outer gap 38. See, col. 4, lns. 28 et seq. of Johnston.

The Examiner indicates that Park discloses a coil 122 at the end of passageway 125-129. In reality, from a close inspection of Park, it can be seen that the coil is buried beneath seal 138 and is not at the end of the passageway 125. The specification indicates that coil 122 is in a cavity of the annular body.

Since Park includes a coil 122 buried beneath the seal 138, Park would have to be completely redesigned to receive the coil of Rosean to surround the narrow passageway 125 of Park. In fact, the narrow passageway would have to be redesigned as well and would have to be placed deeper (more toward the bottom) in the annular body 121.

The Examiner states that “Rosean teaches the concept of **surrounding** the passageway 18 of the MR fluid with a coil 20 as an effective way to vary the viscosity of the fluid in the passageway to control the flow. “ (emphasis ours). An

examination of Rosean reveals that it is directed to the control of pressure, not flow. Rosean discloses a pump which is discharging into two parallel flow paths and as flow is restricted or shut off by the coil 20, then the pressure will rise. A single speed pump such as the one illustrated in Rosean operates on a single flow-discharge pressure curve such that increased discharge pressure occurs with attendant lower flow. First, Rosean is attempting to control pressure and is not trying to damp or brake rotary action or shock. Therefore, the problem being solved by Rosean (pump discharge pressure control) is different than the problem identified by Park and Johnston (damping rotary motion). Rosean is not attempting to damp or arrest the rotation of the pump's impellers. To do so would destroy the pump.

Park and Johnston teach shearing the fluid and Rosean teaches compression. Rosean is really a pump pressure controller, not a brake and there is no motivation to combine them.

In his rejection, the Examiner wants to combine the previously located references of Park and Johnston (both of which teach damping) together with Rosean (which teaches pressure control) to arrive at applicants' claimed invention (cls. 1, 15) of a magnetorheological device which includes chambers and a coil surrounding a portion of a passageway which interconnects the chambers.

MPEP section 2143.01 indicates that the prior art must suggest the desirability of the claimed invention. "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed

invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. ‘The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art.’” Here, it is respectfully suggested that the Examiner is improperly combining the Park and Johnston references which teach shearing of the MR fluid with the Rosean reference which teaches compression of the MR fluid in a pump bypass line to control pump pressure. Compression of the MR fluid is caused by surrounding the passageway with the energized coil. The problem to be solved by the Rosean reference (pressure control) is totally different from the problem to be solved by the Park and Johnston references (damping control). The references themselves do not explicitly provide any suggestion or motivation for combining the references. Nor can any suggestion or motivation be implicitly found since the references themselves are structurally different each from the other and they are directed toward solving different problems. Nor can any suggestion or motivation be implicitly found since the references are structurally different from the instant invention and they are each directed toward solving different problems using different technology.

In *In re Kotzab*, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000) the court held that a “finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of [the claimed

invention] to make the combination in the manner claimed” must be made. In the instant application, the Examiner has not identified a specific understanding or principle within the knowledge of the skilled artisan that would have motivated one with no knowledge of the claimed invention to make the combination in the manner claimed. The Examiner states that “Rosean teaches the concept of surrounding the passageway 18 of the MR fluid with a coil 20 as an effective way to vary the viscosity of the fluid in the passageway to control the flow, see column 2, lines 49-53.” However, nowhere does the Examiner identify the artisan given the differences in the problems to be solved, nor does the Examiner explain the motivation for combining the structure of Park and Johnston based on shear principles with the much different structure of Rosean based on compression principles.

Assuming, arguendo, that a person of ordinary skill in some art had the three references of Park, Johnston and Rosean before him/her, the Examiner has failed to identify what the art is and why the person would have the references before him/her. For example, if working in the art of rotary dampers why would a person of ordinary skill in that art be looking at the pressure controller of Rosean in the first place? And, vice versa, if working in the art of pressure controllers why would a person of ordinary skill in that art be looking at the rotary dampers of Park and Johnston? Further, assuming arguendo, that a person of ordinary skill in the art of rotary dampers had the references of Park, Johnston and Rosean before him would he/she look to combine them? To combine Rosean with Park and/or

Johnston it seems that the person of ordinary skill in the art would have to look at Rosean with the thought that the pump's impellers would have to be retarded or damped in some way in order to make a mental connection with the rotary damping of Park and Johnston. This is a difficult assumption to make because it is possible that the pump of Rosean could be other than a rotary pump. Further, there is no teaching or suggestion in Rosean to dampen or retard the pump so a leap of logic is required to combine the teachings of the three references even if for some reason they were before a person of ordinary skill in the art of rotary dampers. It must be remembered that a person of ordinary skill in the art is a person that would not innovate. A person of ordinary skill in the art is one who thinks along the line of conventional wisdom and does not take to innovate.

Standard Oil Co. v. American Cyanamid Co., 774 F.2d 448, 454, 227 USPQ 293 (Fed. Cir. 1985).

Therefore, no one of ordinary skill in the art would have recognized either an implicit or explicit suggestion in any of the references for their combination.

Reconsideration of claims 1 and 15 is respectfully requested as they are believed patentable.

Claims 2 and 3 are dependent on allowable claim 1 and reconsideration of claims 2 and 3 is requested.

In regard to claims 4 and 5, neither Park nor Johnston illustrates a permanent magnet and a coil. As such claims 4 and 5 are allowable and rejoinder of them is requested.

In regard to claims 6 and 7, Park only shows an exterior, not an interior passageway. In any event, for the reasons previously stated in regard to claim 1, claims 6 and 7 are patentable. Reconsideration of claims 6 and 7 is requested.

In regard to claims 8, 9 and 11, none of the claimed edge seals are shown in Park, nor are the claimed third and fourth seals shown in Park. These seals are fixed to the end portions and the end plate, respectively. The seals of Park are on the top of the impeller and not on the bottom thereby creating a leakage problem. Reconsideration of claims 8, 9 and 11 is respectfully requested.

In regard to claim 10, Park does not disclose a passageway having a tortuous path exterior to the housing. Passageway 125 in Park is narrow as previously discussed and it is interconnected with ports 126 and 127 but this does not constitute a tortuous path as explained in applicant's specification and drawings. As such, reconsideration of claim 10 is requested.

Claims 12-14 were previously canceled. Claims 1-11 and 15 are in the application and reconsideration of all claims is requested. Claims 4 and 5 were previously withdrawn and rejoinder is requested.

Respectfully submitted,



Kent Stone
Reg. No. 31,883
NASA GLENN RESEARCH CENTER
21000 BROOKPARK ROAD
OFFICE OF CHIEF COUNSEL
MAIL STOP 500-118
CLEVELAND, OHIO 44135